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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Chin-Ming Hsieh, et al. :
Serial No: 10/722,458 : Art Unit #1733
Filed: 28 November 2003 : Examiner:
Publication No: 2005/0115656 :
Title: VEHICLE TIRE WITH A :
SUPPORTING APPARATUS :
TC 1700

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Pursuant to 35 U.S.C. § 122(c) and 37 C.F.R. § 1.99, the undersigned respectfully submits prior art for consideration by the Examiner.

The undersigned believes the following references are pertinent to the examination of the above-referenced Patent Application.

<u>Cite No.</u>	<u>Patent/Publication No.</u>	<u>Publication Date</u>	<u>Patentee</u>
A	2004/0144463	07/29/2004	HSU
B	2005/0039833	02/24/2005	HSU
C	6,872,272	03/29/2005	HSU

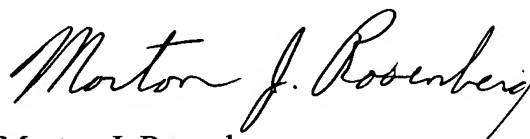
A copy of the Publications and Patent listed above is enclosed herewith.

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Respectfully submitted,
For: ROSENBERG, KLEIN & LEE

A handwritten signature in cursive script that reads "Morton J. Rosenberg".

Morton J. Rosenberg
Registration #26,049

Dated: *1 Aug. 2005*

Suite 101
3458 Ellicott Center Drive
Ellicott City, MD 21043
(410) 465-6678

CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing Third-Party Submission, in its entirety, pursuant to 37 C.F.R. § 1.99(c) was served on the Patent owner at the following address: Birch Stewart Kolasch & Birch, P.O. Box 747, Falls Church, Virginia 22040-0747 via first class postage prepaid on the dated noted below.

Date: 1 Aug. 2005

Morton J. Rosenberg
Morton J. Rosenberg

Substitute for form 1449/PTO.

**INFORMATION DISCLOSURE
STATEMENT BY THIRD PARTY**
(Use as many sheets as necessary)

Sheet 1

of 1

Complete if Known

Application Number	10/722,458
Filing Date	28 November 2003
First Named Inventor	CHIN-MING HSIEH
Art Unit	
Examiner Name	
Attorney Docket Number	

U. S. PATENT DOCUMENTS

[illegible]

FOREIGN PATENT DOCUMENTS

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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.¹ Applicant's unique citation designation number (optional).² See Kind Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04.³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3).⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document.⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible.⁶ Applicant is to place a check mark here if English language Translation is attached.

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US 20040144463A1

(19) **United States**(12) **Patent Application Publication**
Hsu(10) Pub. No.: **US 2004/0144463 A1**(43) Pub. Date: **Jul. 29, 2004**(54) **VEHICLE TIRE****Publication Classification**(76) Inventor: **Shut Chen Hsu, I Lan City (TW)**(51) Int. Cl.⁷ **B60C 17/04; B60C 17/00**(52) U.S. Cl. **152/158; 152/520**

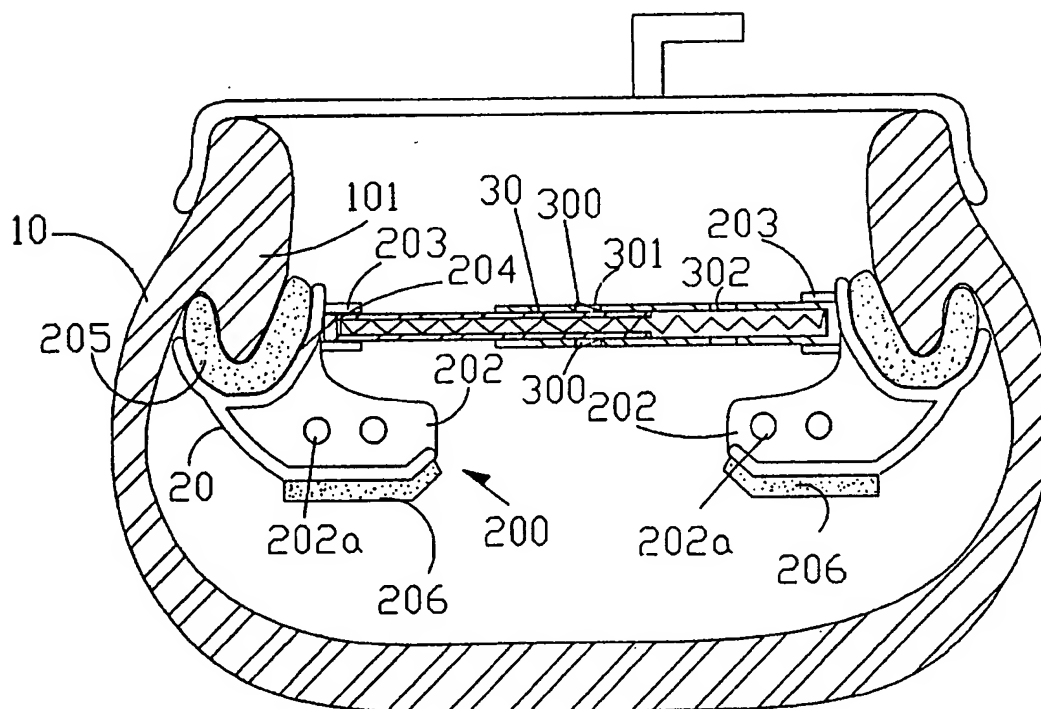
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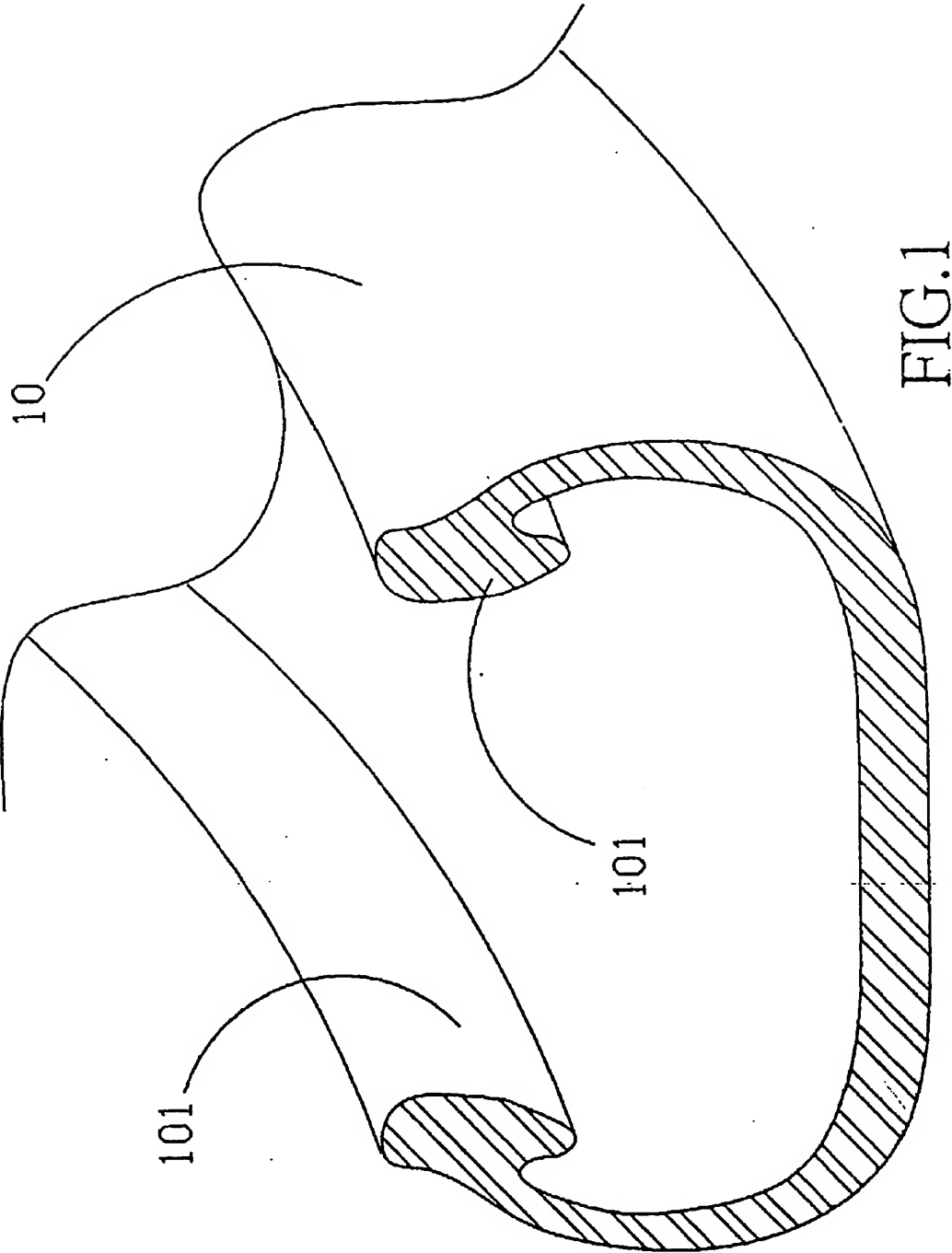
ROSENBERG, KLEIN & LEE**3458 ELLICOTT CENTER DRIVE-SUITE 101
ELLICOTT CITY, MD 21043 (US)**

(57)

ABSTRACT

A vehicle tire is constructed to include a main tire member, the main tire member having two inward lips, and two annular supplementary tire members respectively fastened to the inward lips of the main tire member and adapted to support the main tire member in shape when damaged accidentally.

(21) Appl. No.: **10/352,091**(22) Filed: **Jan. 28, 2003**



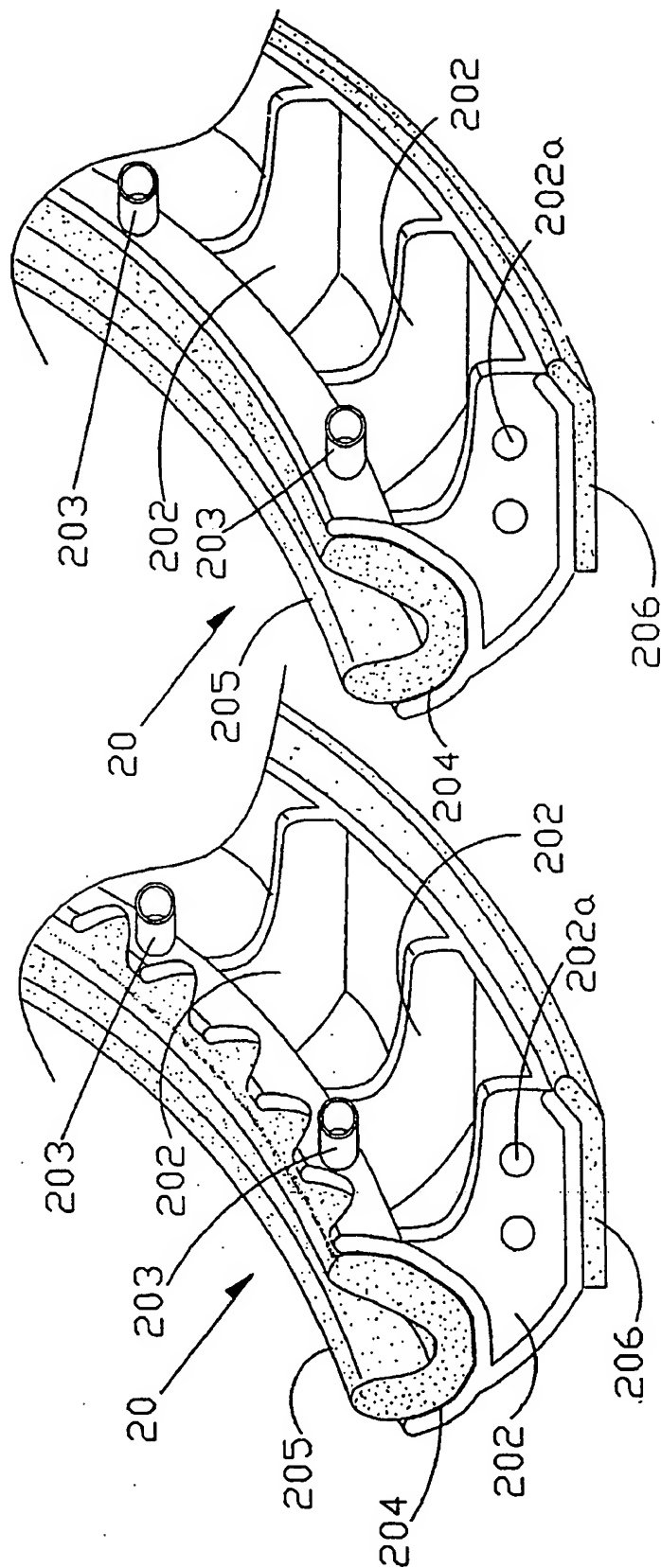


FIG. 2A

FIG. 2B

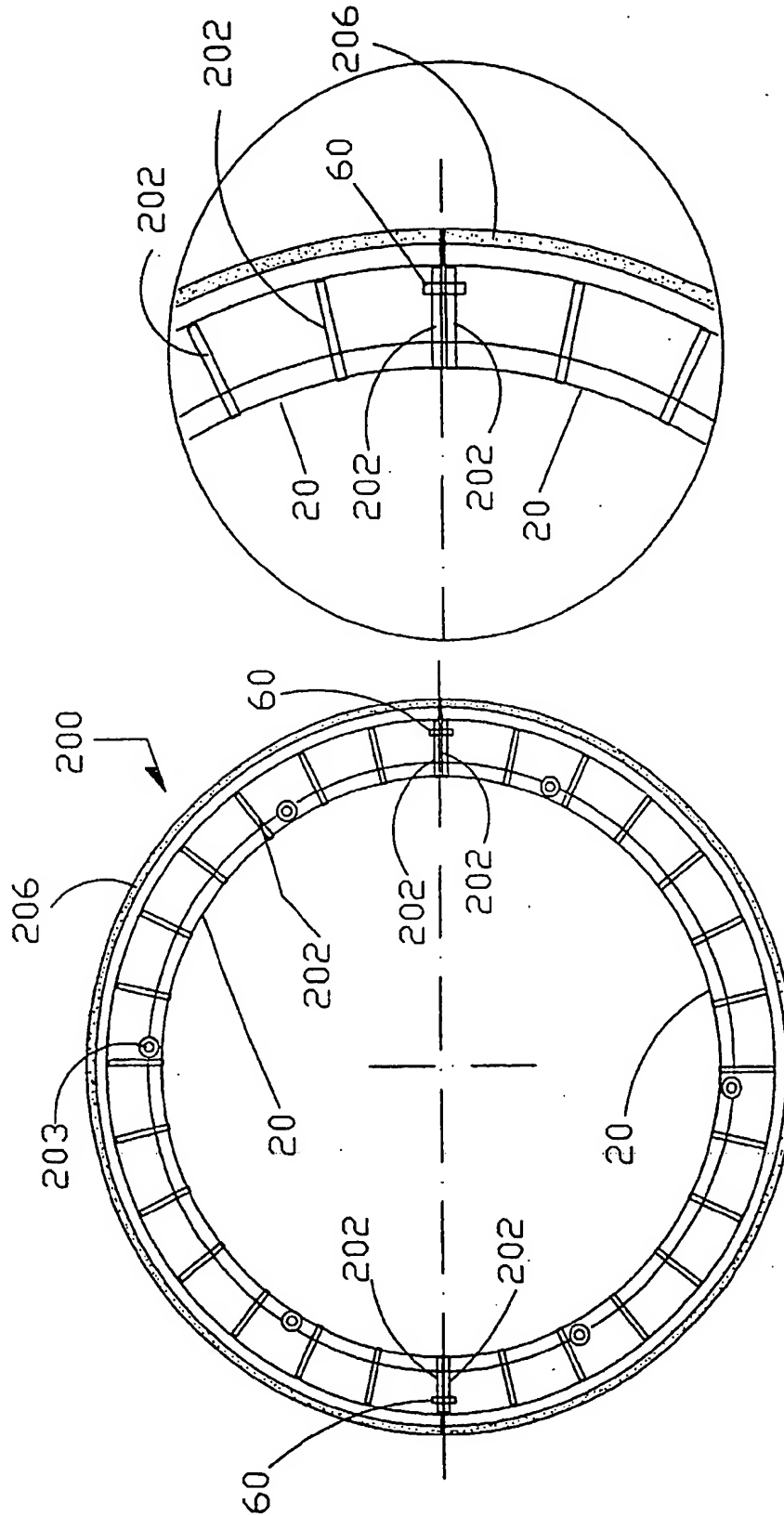


FIG. 3B

FIG. 3A

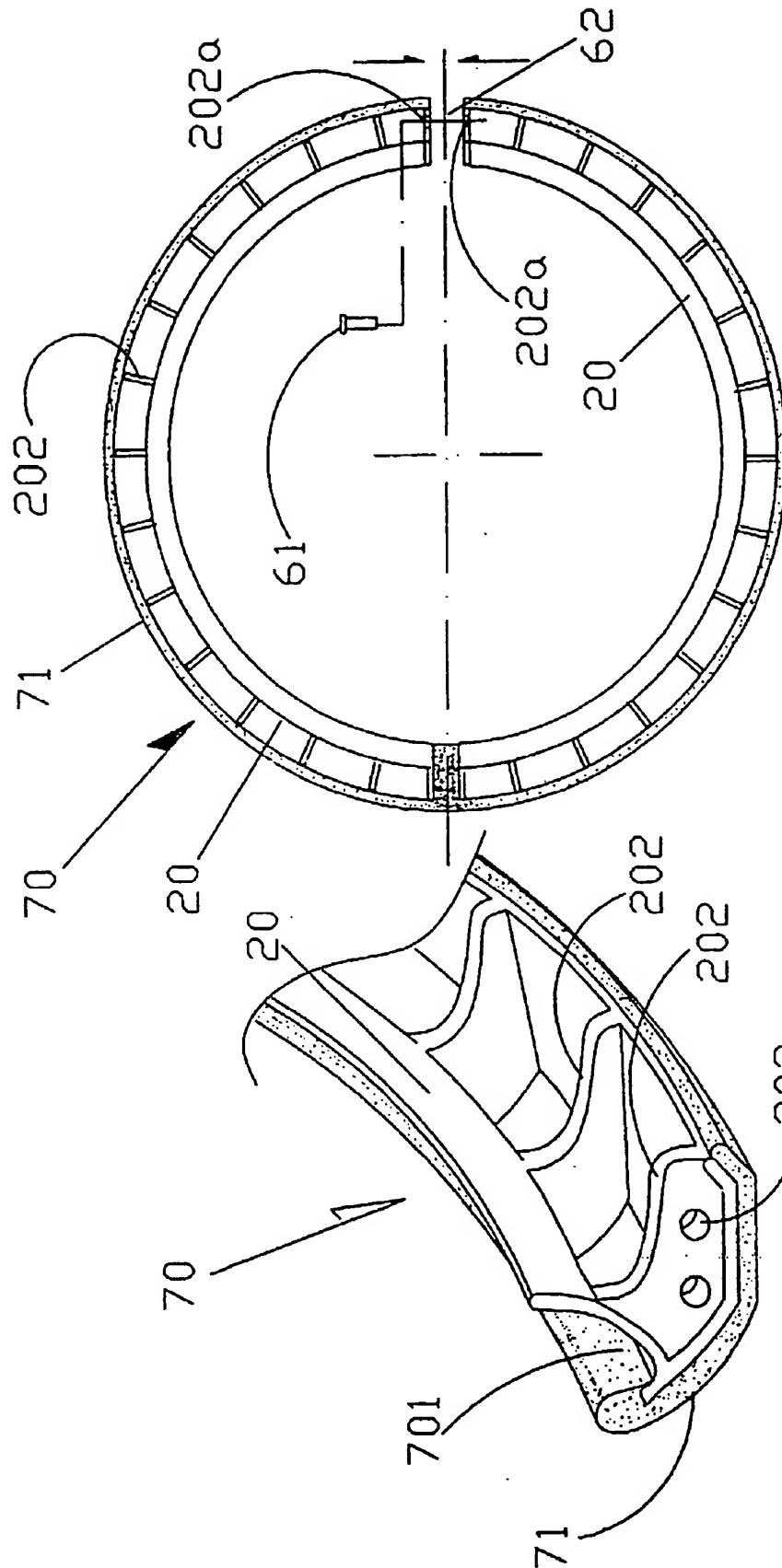


FIG. 3C

FIG. 3D

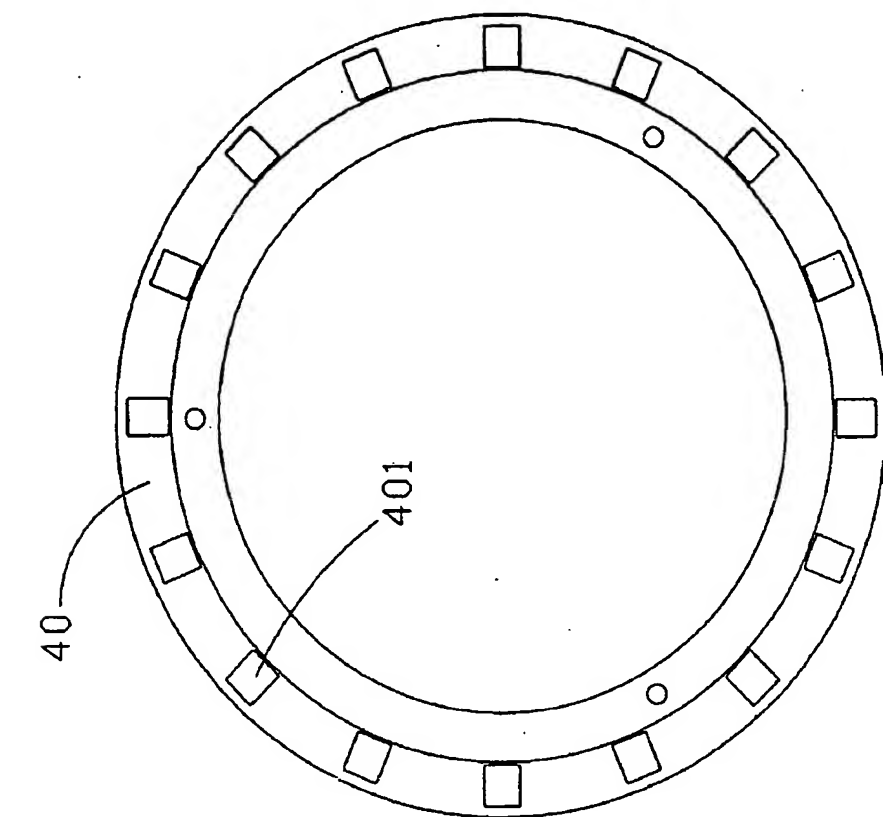


FIG. 4B

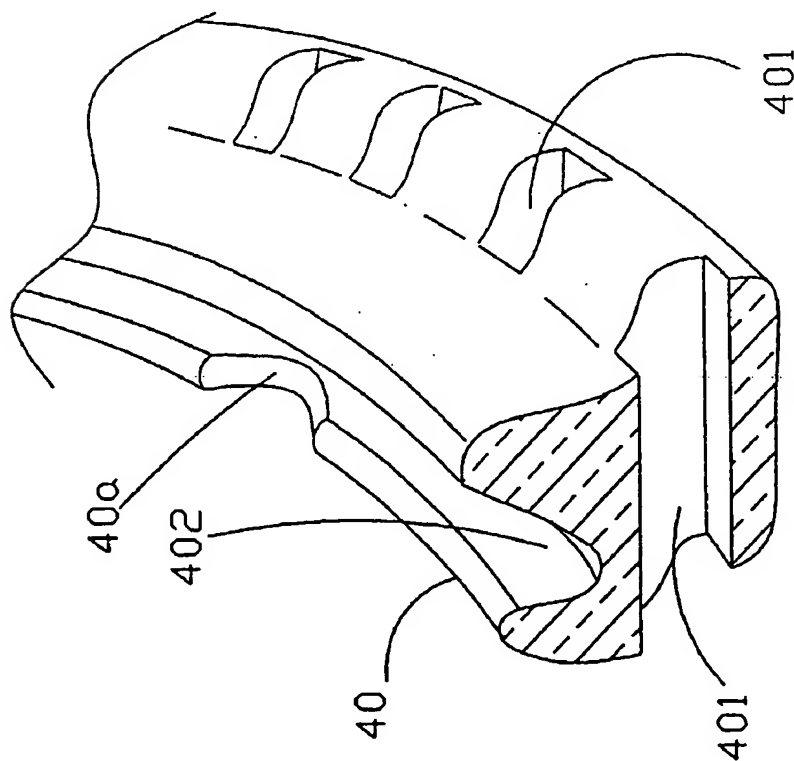


FIG. 4A

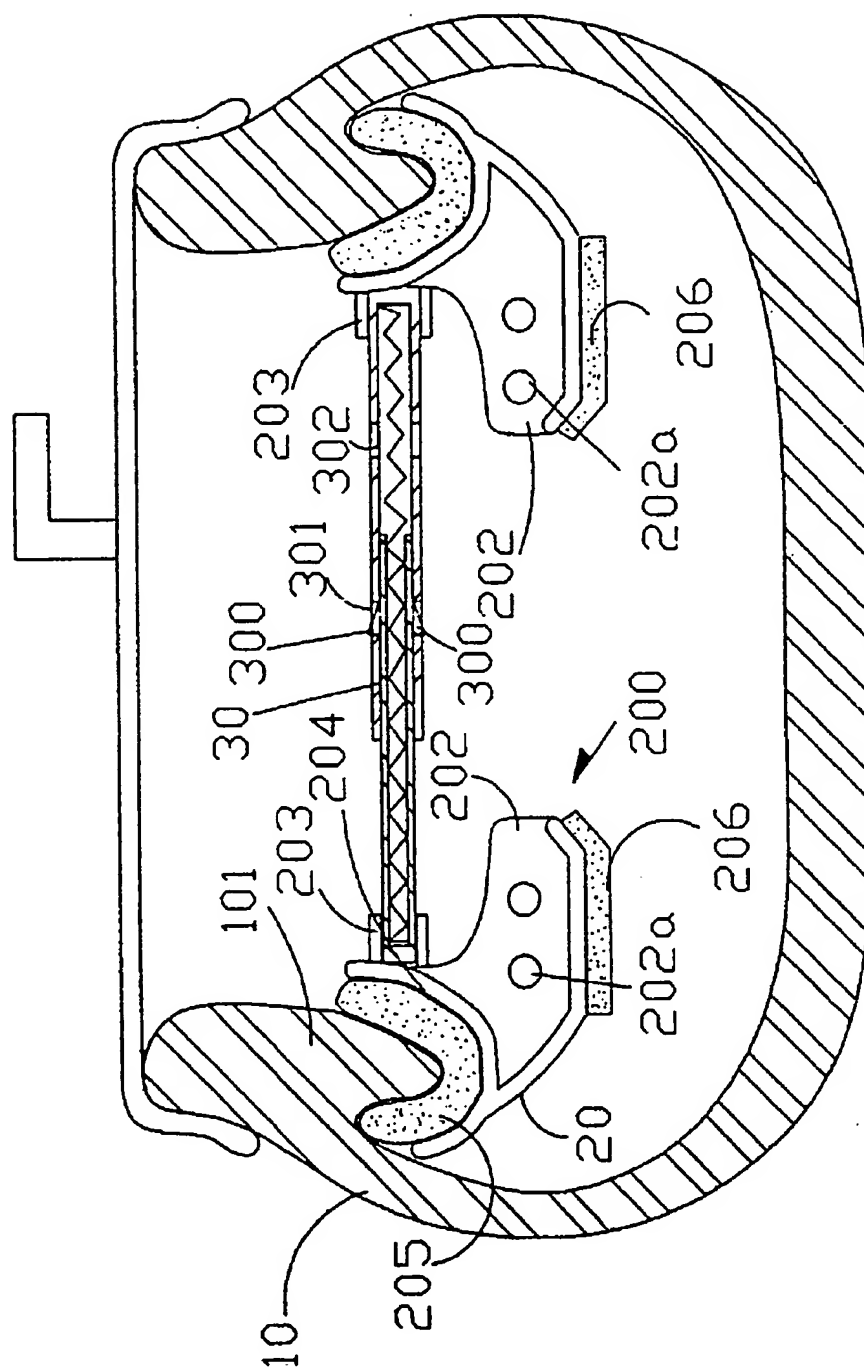


FIG. 5

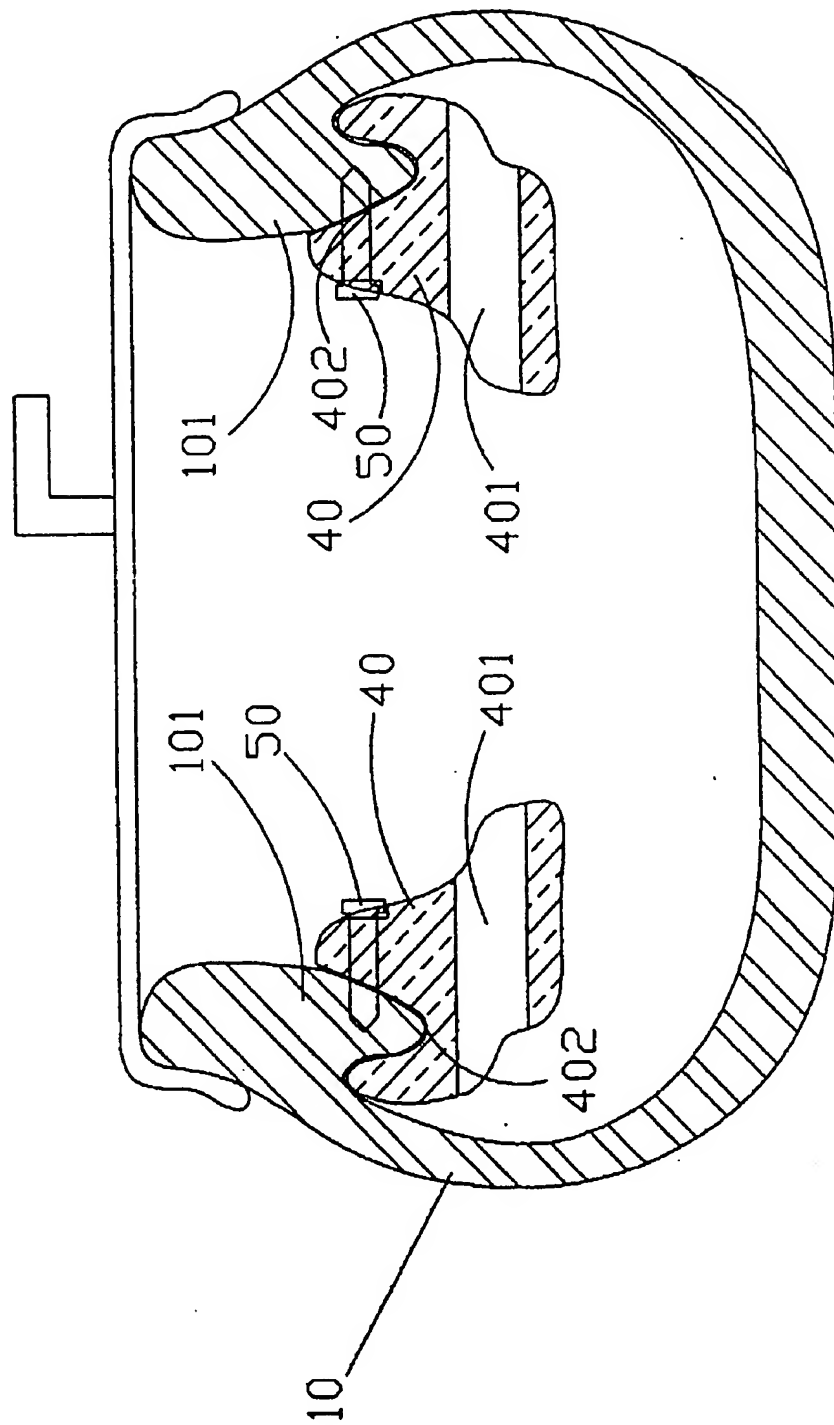


FIG. 6

VEHICLE TIRE

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The present invention relates to vehicle tires and, more particularly, to such a vehicle tire, which supports the tire for normal functioning for a length time when the tire damaged accidentally.

[0003] 2. Description of the Related Art

[0004] For a safety driving, the condition of vehicle tires must be regularly checked. There are two kinds of vehicle tires used in existing motorcars, namely, the tire having an inner tube, and the tire without inner tube. According to conventional tire designs, a meshed metal wire structure formed of transverse metal wires and a longitudinal metal wires is arranged in between the carcass and the tread. The two layers of metal wires are arranged at 17-26°. This meshed metal wire structure can only reinforce the structural strength of the tire. It cannot protect the tire against piercing of an external sharp object. When a nail or the like pierced through the open spaces in the meshed metal wire structure, the tire leaks, and a tire explosion accident may occur.

[0005] U.S. application Ser. Nos. 10/022,424 10/157,149, applied by the present inventor, disclose different tire structures that eliminate the aforesaid problems.

SUMMARY OF THE INVENTION

[0006] The present invention has been accomplished under the circumstances in view. According to one aspect of the present invention, the vehicle tire comprises a main tire member, the main tire member having two inward lips, and two annular supplementary tire members respectively fastened to the inward lips of the main tire member and adapted to support the main tire member in shape when damaged accidentally. According to another aspect of the present invention, the supplementary tire members each comprises two semicircular supplementary tire elements, each semicircular supplementary tire element having a plurality of transversely extended reinforcing ribs, a top locating groove, and a plurality of mounting screw holes in the reinforcing ribs near two distal ends thereof, a plurality of screw bolts fastened to the mounting screw holes of the semicircular supplementary tire elements to secure the semicircular supplementary tire elements into an annular supplementary tire member, and a packing member mounted in the top locating groove of the respective supplementary tire element for engagement with one inward lip of the main tire member. According to still another aspect of the present invention, retractable stretchers are stretched between the supplementary tire members to support the supplementary tire members on the inward lips of the main tire.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] FIG. 1 is an exploded view of a main tire member for a vehicle tire according to the present invention.

[0008] FIG. 2A is an elevational view of a part of a supplementary tire element for a supplementary tire member for a vehicle tire according to the present invention.

[0009] FIG. 2B shows an alternate form of the supplementary tire element according to the present invention.

[0010] FIG. 3A is a sectional plain view of a supplementary tire member for a vehicle tire according to the present invention.

[0011] FIG. 3B is an enlarged view of a part of FIG. 3A.

[0012] FIG. 3C is a schematic plain view of an alternate form of the supplementary tire member according to the present invention.

[0013] FIG. 3D is an elevational view, in an enlarged scale, of a part of FIG. 3C.

[0014] FIG. 4A is an elevational view of a part of another alternate form of the supplementary tire member according to the present invention.

[0015] FIG. 4B is a sectional plain view of the supplementary tire member shown in FIG. 4A.

[0016] FIG. 5 is a cross-sectional view of a vehicle tire according to the present invention.

[0017] FIG. 6 is a cross-sectional view of an alternate form of the vehicle tire according to the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0018] Referring to FIGS. 1, 2A, 2B, 3A, 3B, and 5, a vehicle tire in accordance with the present invention is shown comprised of a main tire member 10, two supplementary tire members 200, packing members 205 and 206, and retractable stretchers 30.

[0019] The main tire member 10 has embedded therein meshed reinforcing members, two inward lips 101 respectively inwardly protruded from the two opposite sidewalls thereof (see FIG. 1). The supplementary tire members 200 each are comprised of two supplementary tire elements 20 (see FIGS. 3A, 3B and 5). The two supplementary tire elements 20 each have transversely extended reinforcing ribs 202, transversely extended plugholes 203, and a longitudinally extended top locating groove 204 (see FIGS. 2A and 2B). The periphery of the locating groove 204 of each supplementary tire element 20 may be smooth (see FIG. 2A), or serrated (see FIG. 2B). The first and last reinforcing ribs 202 of the supplementary tire elements 20 have screw holes 202a. Screw bolts 60 are fastened to the screw holes 202a to fixedly secure the two supplementary tire elements 20 into one circular supplementary tire member 200 (see FIGS. 3A and 3B). Packing members 205 are respectively fastened to the longitudinally extended top locating grooves 204 of the semicircular halves 20 of the supplementary tire members 200. Packing members 206 are respectively fixedly fastened to the supplementary tire elements 20 of the circular supplementary tire members 200 at the bottom side (opposite to the top locating grooves 204). The retractable stretchers 30 are connected between the supplementary tire members 200. Each retractable stretcher, 30 is comprised of two parts that slide one inside another. The two parts of each retractable stretcher 30 are respectively fastened to a respective plughole 203 in the circular supplementary tire members 200. One part of each retractable stretcher 30 has a spring-supported retaining rod 300 and, the other part of each retractable stretcher 30 has a plurality of locating holes 301 and 302 longitudinally aligned in a line and adapted to selectively receive the spring-supported retaining rod 300. A spring member may be mounted in each retractable stretcher

30 and connected between the two parts of the respective retractable stretcher 30 to force the two parts of the respective retractable stretcher 30 apart.

[0020] With reference to FIG. 5, the two supplementary tire members 200 are respectively fastened to the inward lips 101 of the main tire member 10, and the retractable stretchers 30 are connected between the supplementary tire members 200 to force the supplementary tire members 200 into positive engagement with the inward lips 101 of the main tire member 10. When installed, the packing members 205 are respectively sandwiched in between the inward lips 101 of the main tire member 10 and the supplementary tire elements 20 of the supplementary tire members 200.

[0021] FIGS. 3C and 3D show an alternate form of the supplementary tire member. According to this embodiment, the supplementary tire member 70 is shaped like a split ring, comprising a supplementary tire element 20 and an outer rubber layer 71 covering the supplementary tire element 20. The outer rubber layer 71 has a longitudinally extended top locating groove 701 for engagement with one inward lip 101 of the main tire member 10 (see FIG. 1). The supplementary tire element 20 has transversely extended reinforcing ribs 202 and screw holes 202a in the reinforcing ribs 202 at the two distal ends. Screw bolts 61 are respectively fastened to the screw holes 202a to join the ends of the supplementary tire element 20. The supplementary tire element 20 is preferably made of metal alloy or strong light metal.

[0022] FIGS. 4A and 4B show another alternate form of the supplementary tire member. According to this embodiment, the supplementary tire member 40 is an annular member molded from rubber having meshed reinforcing means embedded therein. The supplementary tire member 40 has a plurality of transversely extended air vents 401, an endless locating groove 402 extended along the inner diameter for coupling to one inward lip 101 of the main tire member 10 (see FIG. 1), and a hand notch 40a at one side of the endless locating groove 402 for easy installation of the supplementary tire member 40 in one inward lip 101 of the main tire member 10.

[0023] With reference to FIG. 6 and FIGS. 4A and 4B again, the supplementary tire members 40 are respectively and bilaterally fastened to the inside of the main tire member 10 and fixedly secured thereto with screws 50, keeping the endless locating grooves 402 of the supplementary tire members 40 engaged with the inward lips 101 of the main tire member 10.

[0024] In case the tire 10 exploded due to an accident, the supplementary tire members 200 or 40 support the tire 10 in shape, enabling the car to be continuously driven to a repair shop safely to receive a repair.

[0025] It is to be understood that the drawings are designed for purposes of illustration only, and are not intended for use as a definition of the limits and scope of the invention disclosed.

What the invention claimed is:

1. A vehicle tire comprising:

a main tire member main tire member, said main tire member having embedded therein meshed reinforcing members and two inward lips respectively inwardly protruded from two opposite sidewalls thereof; and

two annular supplementary tire members respectively fastened to the inward lips of said main tire member and adapted to support said main tire member in shape when damaged accidentally, said supplementary tire members each comprising two semicircular supplementary tire elements, said semicircular supplementary tire elements each having a plurality of transversely extended reinforcing ribs, a top locating groove, and a plurality of mounting screw holes in said reinforcing ribs near two distal ends thereof, a plurality of screw bolts fastened to the mounting screw holes of said semicircular supplementary tire elements to secure said semicircular supplementary tire elements into an annular supplementary tire member, and a packing member mounted in the top locating groove of the respective supplementary tire element for engagement with one inward lip of said main tire member.

2. The vehicle tire as claimed in claim 1, wherein said supplementary tire members each further comprise a plurality of supplementary packing members respectively fastened to the respective supplementary tire elements at a bottom side.

3. The vehicle tire as claimed in claim 1, wherein the periphery of the locating groove of each supplementary tire element of each of said supplementary tire members is serrated.

4. The vehicle tire as claimed in claim 1 further comprising a plurality of retractable stretchers respectively supported between said supplementary tire members, said retractable stretchers each comprising a first part and a second part that slide one inside the other, said first part and said second part each having one end plugged into one plughole in one supplementary tire element of one of said supplementary tire members, and spring means mounted inside said first part and said second part and adapted to force said first part and said second part apart, said first part having a spring-supported retaining rod, said second part having a plurality of locating holes longitudinally aligned in a line and adapted to receive said spring-supported retaining rod.

5. A vehicle tire comprising:

a main tire member main tire member, said main tire member having embedded therein meshed reinforcing members and two inward lips respectively inwardly protruded from two opposite sidewalls thereof; and

two annular supplementary tire members respectively fastened to the inward lips of said main tire member and adapted to support said main tire member in shape when damaged accidentally, said supplementary tire members each comprising a supplementary tire element shaped like a split ring, said supplementary tire element having a plurality of transversely extended reinforcing ribs and a plurality of mounting screw holes in said reinforcing ribs near two distal ends thereof, a plurality of screw bolts fastened to the mounting screw holes of said semicircular supplementary tire elements to join the two distal ends of said supplementary tire element, and a rubber cover layer fastened to an outside wall of said supplementary tire element, said rubber cover layer having a locating groove forced into engagement with one inward lip of said main tire member.

6. A vehicle tire comprising:

- a main tire member main tire member, said main tire member having embedded therein meshed reinforcing members and two inward lips respectively inwardly protruded from two opposite sidewalls thereof; and
- two annular supplementary tire members respectively fastened to the inward lips of said main tire member and adapted to support said main tire member in shape when damaged accidentally, said supplementary tire members, said annular supplementary tire members

being molded from rubber having meshed reinforcing means embedded therein, each having a plurality of transversely extended air vents, an endless locating groove extended along the inner diameter thereof for coupling to one inward lip of said main tire member, and a hand notch at one side of said endless locating groove for easy installation of the respective supplementary tire member in one inward lip of said main tire member.

* * * * *



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Hsu

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(43) **Pub. Date: Feb. 24, 2005**

(54) **TIRE REINFORCING ARRANGEMENT**

Publication Classification

(76) **Inventor: Shut Chen Hsu, I Lan City (TW)**

(51) **Int. Cl.⁷ B60C 1/00; B60C 1/00**

(52) **U.S. Cl. 152/151**

Correspondence Address:

ROSENBERG, KLEIN & LEE

3458 ELLICOTT CENTER DRIVE-SUITE 101

ELLICOTT CITY, MD 21043 (US)

(57) **ABSTRACT**

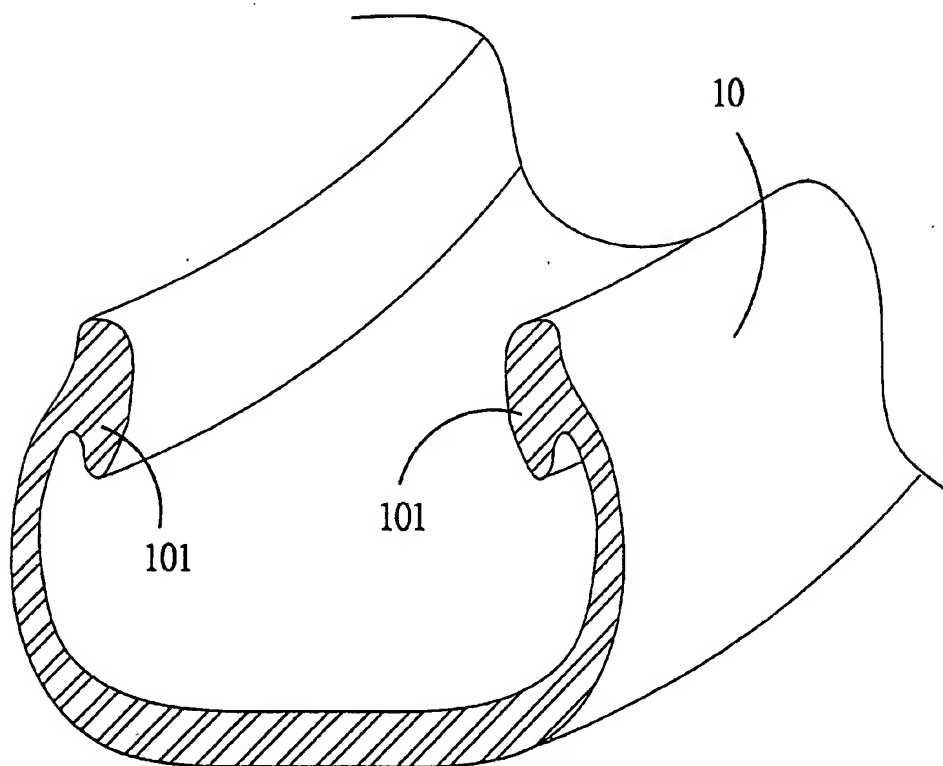
A tire reinforcing arrangement includes an outer tire having two hooked flanges at two sides, two annular spare tires bilaterally set inside the outer tire, each annular spare tire being formed of a plurality of spare tire blocks that are fastened to one another by links and screw bolts, each spare tire block having two mounting through holes, a top locating groove adapted to receive the hooked flanges of the outer tire, an embossed bottom wall, and two projecting portions diagonally disposed at two ends, and stretchers respectively stopped between the annular spare tires.

(21) **Appl. No.: 10/679,306**

(22) **Filed: Oct. 7, 2003**

(30) **Foreign Application Priority Data**

Aug. 20, 2003 (TW)..... 092122934



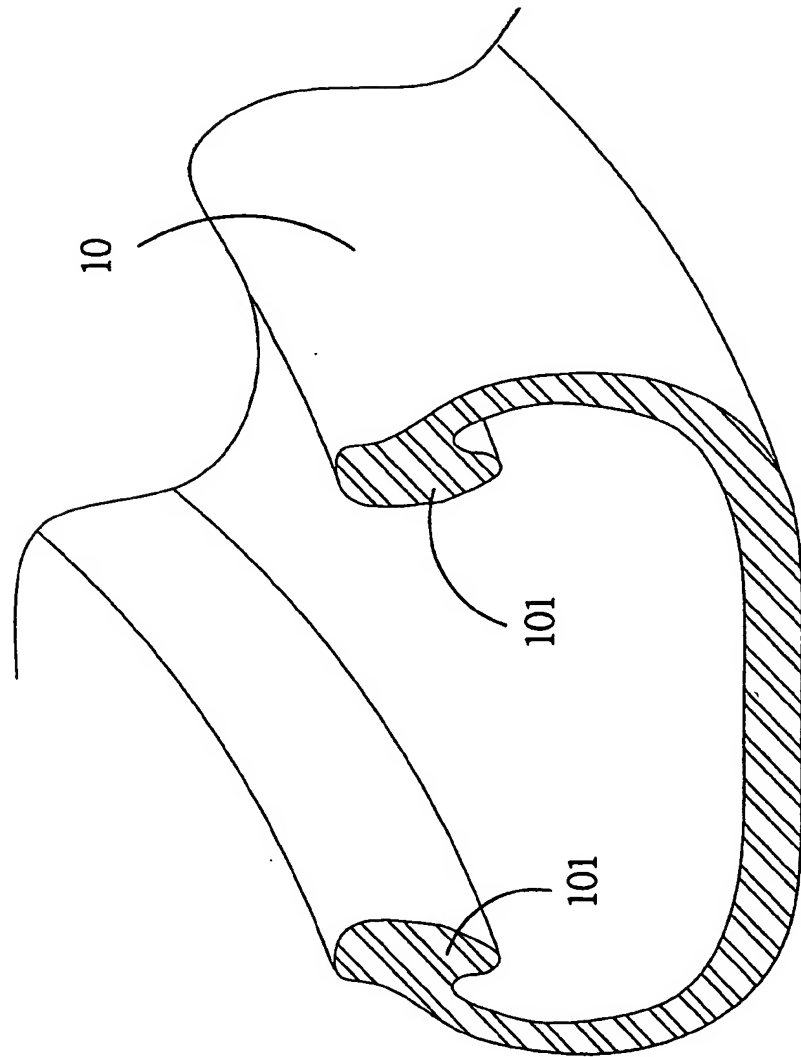


FIG. 1

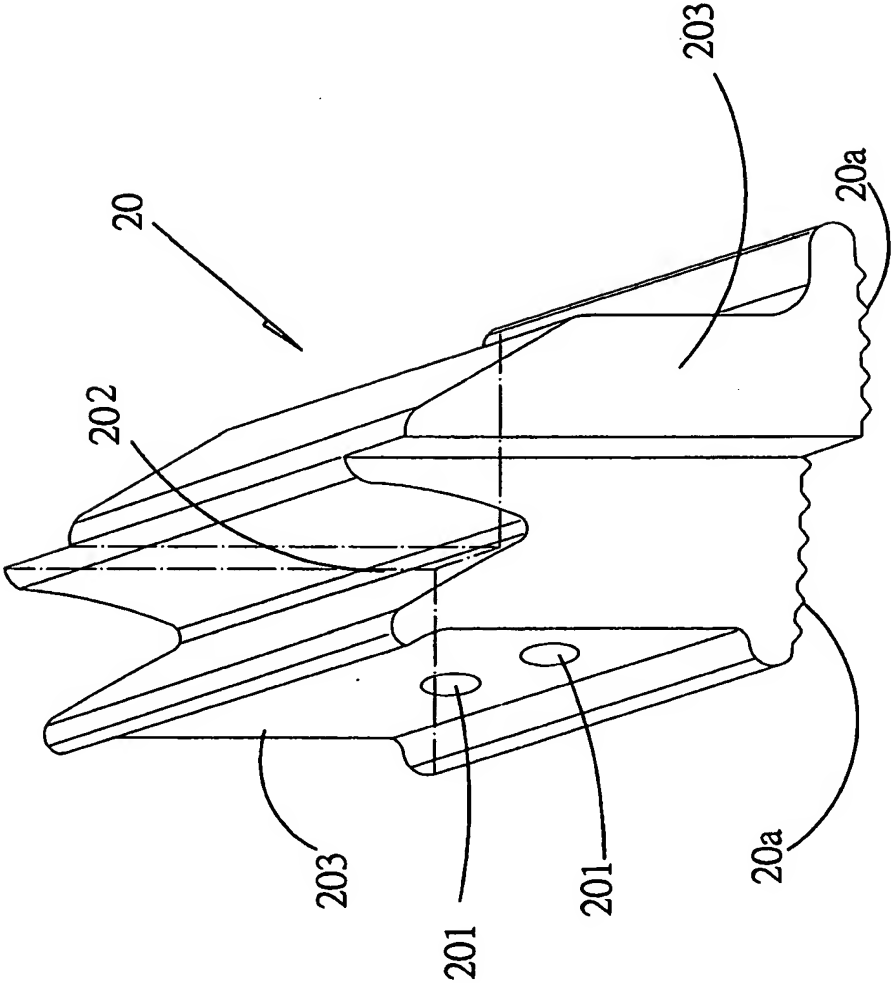


FIG. 2

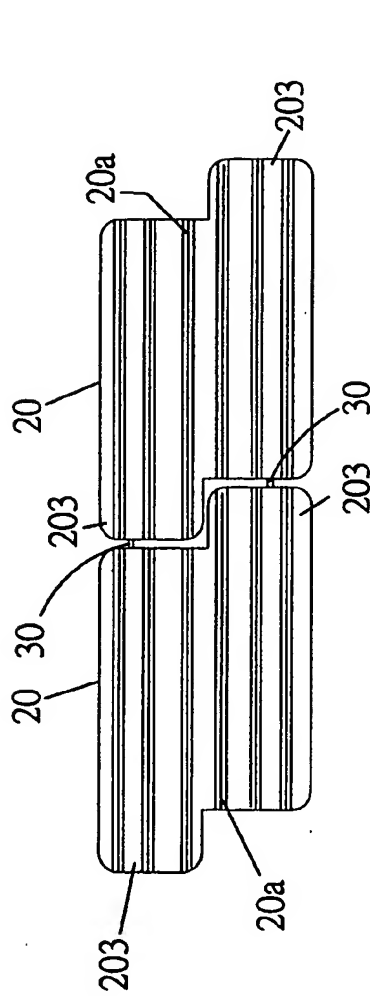


FIG. 3

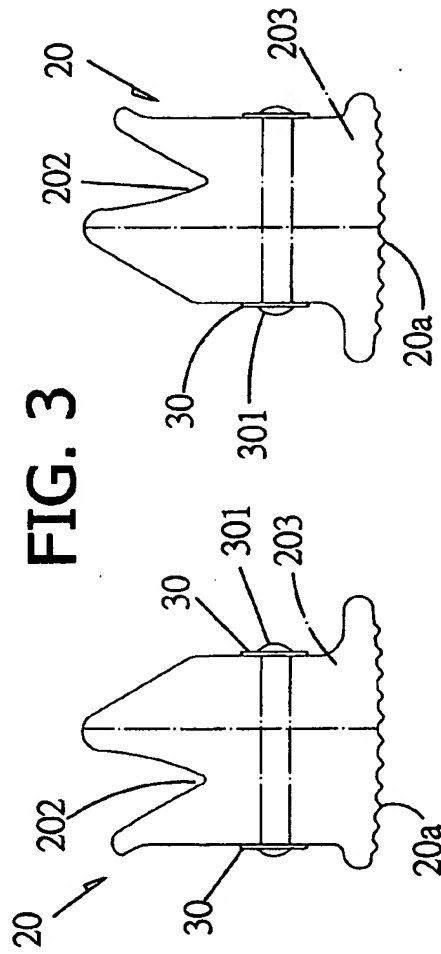
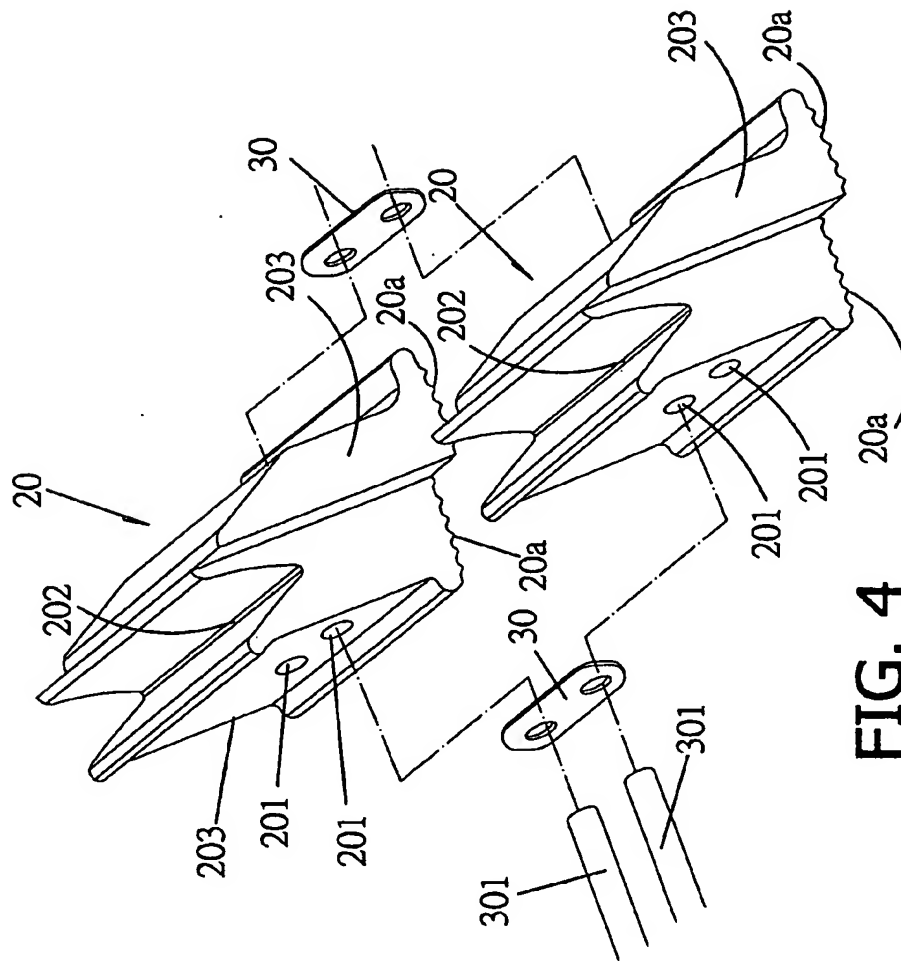
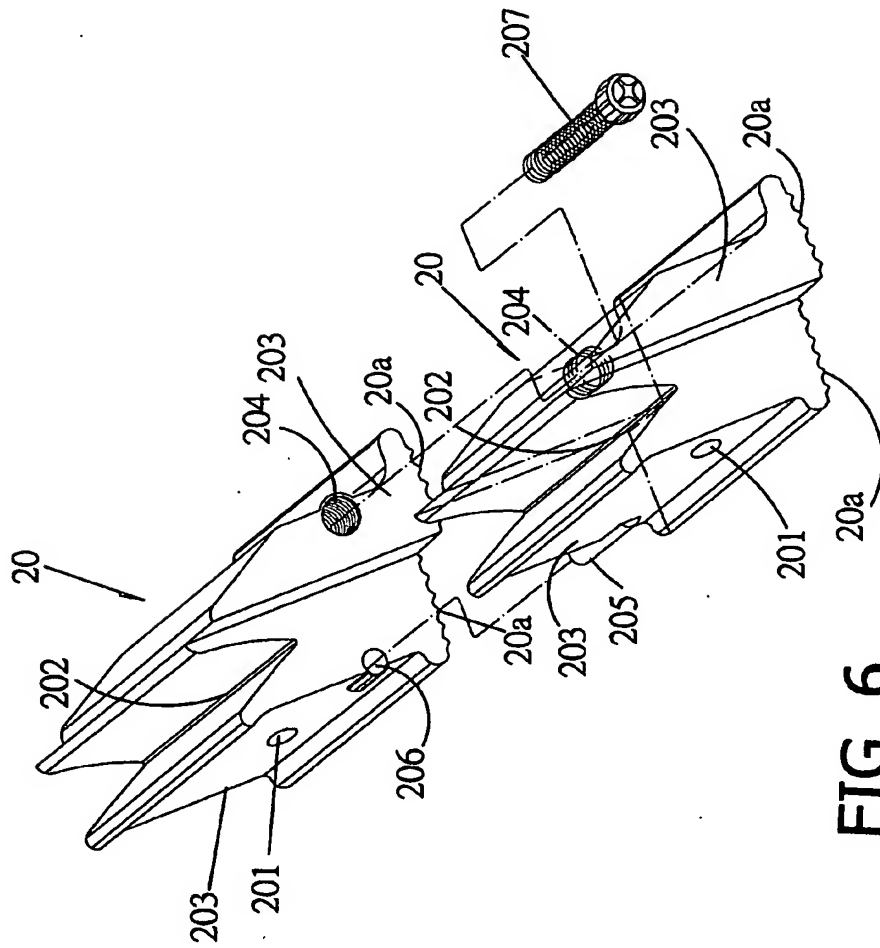


FIG. 5





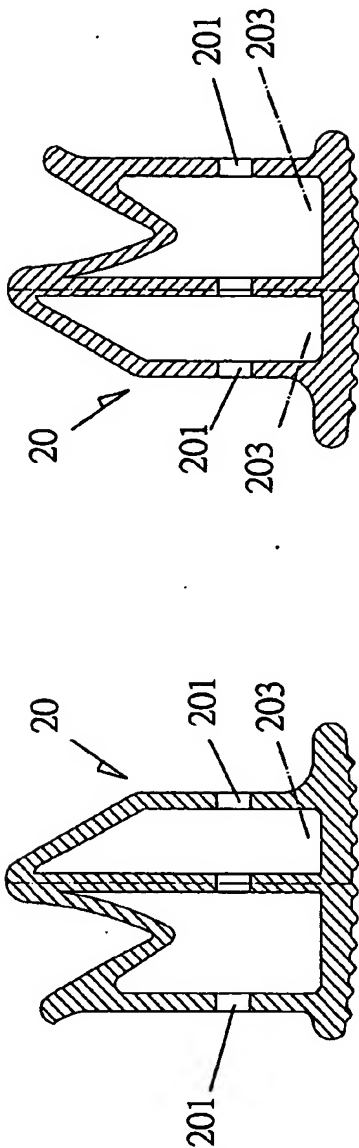


FIG. 7

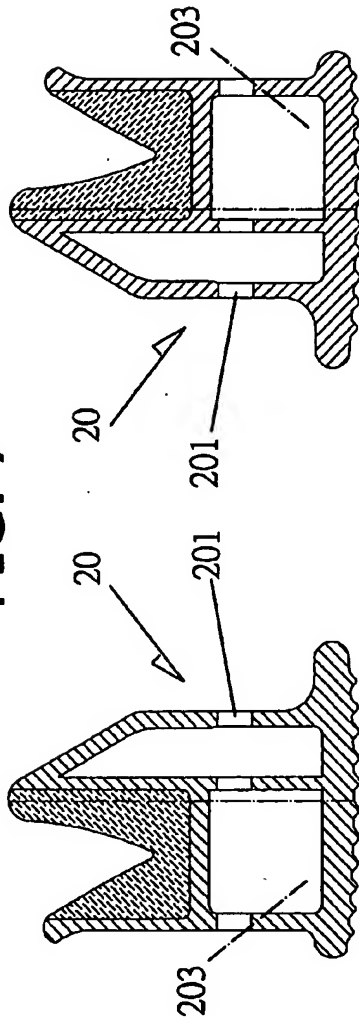


FIG. 8

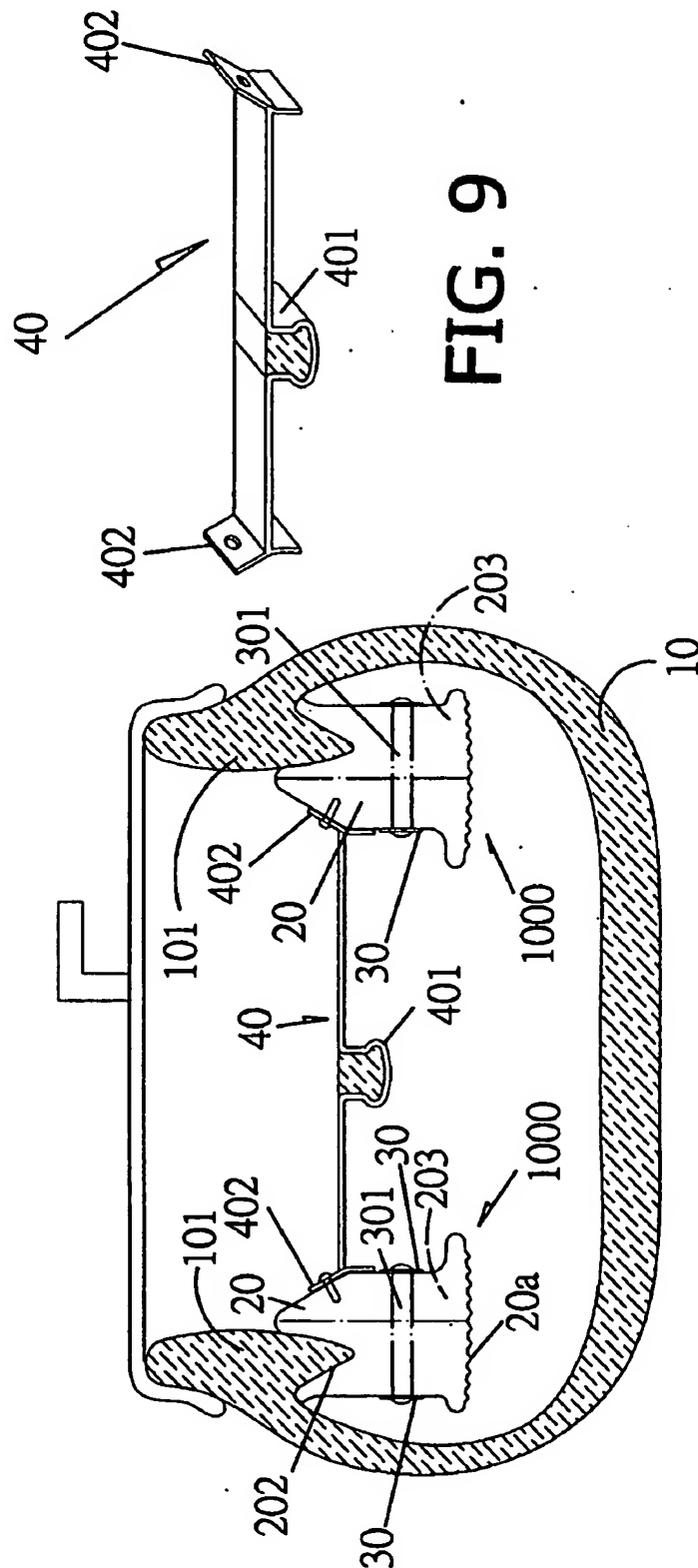


FIG. 9

FIG. 11

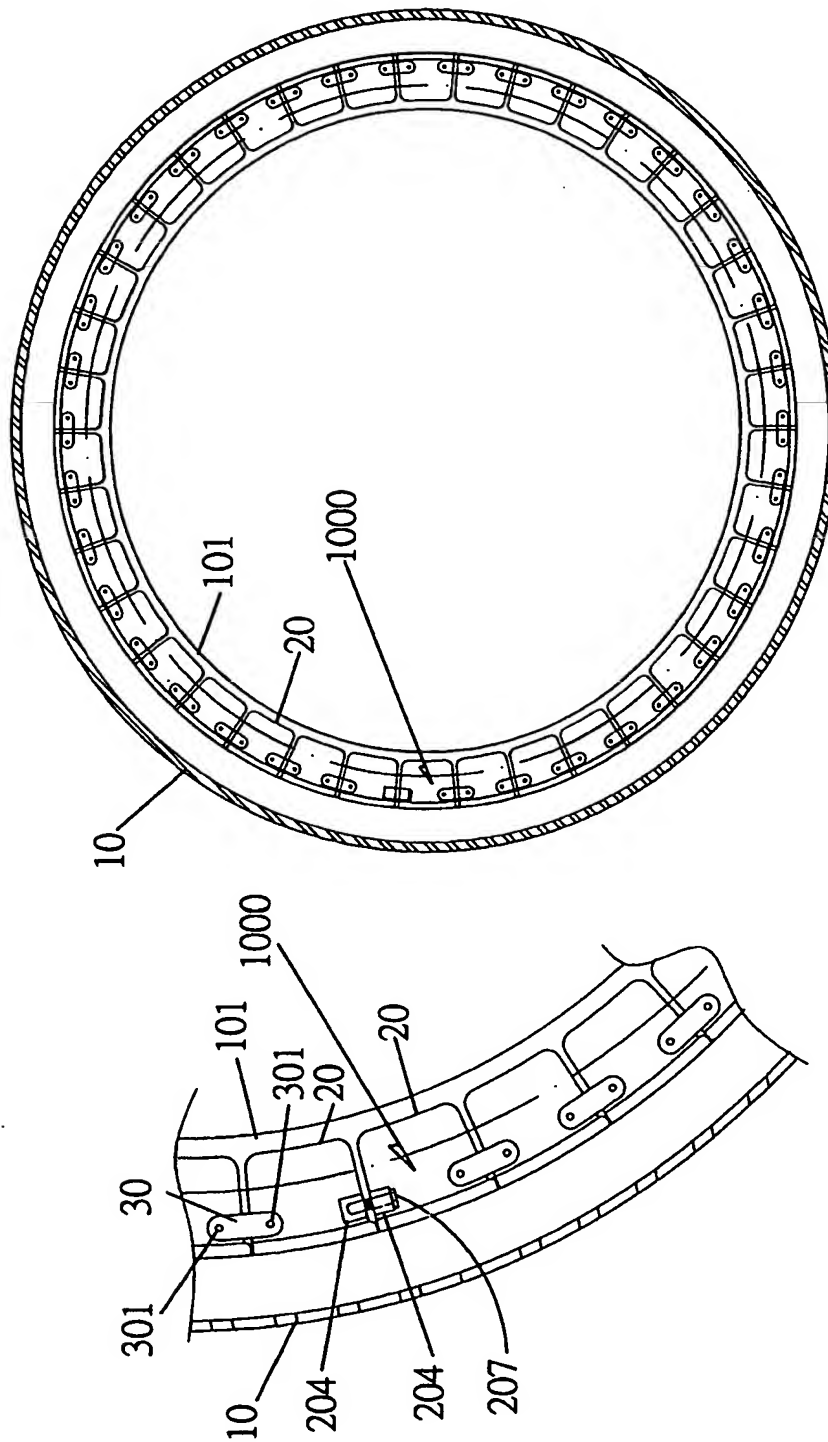


FIG. 10

TIRE REINFORCING ARRANGEMENT

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The present invention relates to vehicle tires and, more particularly, to such a vehicle tire, which is reinforced with inner spare tires.

[0003] 2. Description of the Related Art

[0004] Conventional vehicle tires include two types, namely, the one with inner tube and the other without inner tube. A tire with an inner tube is inflatable. When the inner tube of a tire pierced by a pointed external object, it leaks, and the driver must stop the car immediately. A sudden explosion of a tire may cause a traffic accident when the car is running on a freeway. A tubeless tire or the so-called high-speed tire does not explode when pierced by a pointed external object, giving a sufficient time to let the driver drive the car to a garage for repair. However, because no significant tire pressure loss is shown when one tire of the car was pierced by a pointed external object, the driver may keep driving the car on a highway or freeway. In this case, an accident may occur.

[0005] Therefore, it is desirable to provide a tire reinforcing arrangement that eliminates the aforesaid problems.

SUMMARY OF THE INVENTION

[0006] The present invention has been accomplished under the circumstances in view. It is the main object of the present invention to provide a tire reinforcing arrangement, which allows the car driver to keep driving the car safely for a certain period of time in case one tire of the tire is pierced by a pointed external object. It is another object of the present invention to provide a tire reinforcing arrangement, which is easy to install. It is still another object of the present invention to provide a tire reinforcing arrangement, which fits tires of different sizes.

[0007] To achieve these and other objects of the present invention, the tire reinforcing arrangement comprises an outer tire, outer tire comprising hooked flanges respectively extended along two opposite sidewalls thereof on the inside; two annular spare tires bilaterally set inside the outer tire, the annular spare tire each comprising a plurality of spare tire blocks, the spare tire blocks each comprising two mounting through holes transversely extended through two opposite sides thereof, a top locating groove adapted to receive the hooked flanges of the outer tire, an embossed bottom wall, and two projecting portions diagonally disposed at two ends, a plurality of links adapted to join the spare tire blocks, and a plurality of screw bolts respectively fastened to the mounting through holes to secure the links to the spare tire blocks; and a plurality of stretchers respectively stopped between the annular spare tires, the stretchers each having two end lugs respectively stopped against the annular spare tires, a U-shaped middle part, and a rubber bonded to the U-shaped middle part.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] FIG. 1 is a sectional elevation of an outer tire according to the present invention.

[0009] FIG. 2 is an elevational view of a spare tire block according to the present invention.

[0010] FIG. 3 is a bottom view showing two spare tire blocks attached together according to the present invention.

[0011] FIG. 4 is an exploded view of a part of an annular spare tire according to the present invention.

[0012] FIG. 5 is schematic front and rear views of the spare tire block according to the present invention.

[0013] FIG. 6 is an exploded view showing the connection arrangement between the first spare tire block and the last spare tire block.

[0014] FIG. 7 is sectional front and rear views of the spare tire block according to the present invention.

[0015] FIG. 8 illustrates the top locating groove of the spare tire block bonded with rubber material.

[0016] FIG. 9 is an elevational view of a stretcher according to the present invention.

[0017] FIG. 10 is a schematic sectional view showing the tire reinforcing arrangement assembled according to the present invention.

[0018] FIG. 11 is a sectional view showing the tire reinforcing arrangement installed in a wheel rim according to the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0019] Referring to FIG. 1, an outer tire 10 is shown having two hooked flanges 101 respectively extended along the two opposite sidewalls thereof on the inside. The hooked flanges 101 have meshed screens (not shown) embedded therein to reinforce the strength.

[0020] Referring to FIGS. 2-6, spare tire blocks 20 are provided each having two mounting through holes 201 transversely extended through two opposite sides, a top locating groove 202 longitudinally disposed at the top, an embossed bottom wall 20a, and two projecting portions 203 diagonally disposed at two ends. Links 30 are symmetrically disposed at two sides and respectively fastened to the mounting through holes 201 by screw bolts 301 to connect the spare tire blocks 20 in series, keeping one projecting portion 203 of each spare tire block 20 abutted against one projecting portion 203 of another. Further, the first and last ones of the connected series of spare tire blocks 20 each have a screw hole 204 extended in parallel to the top locating groove 202, and a pinhole 206 or pin 205 at one end. By means of inserting the pin 205 of the last spare tire block into the pin hole 206 of the first spare tire block and the threading a screw 207 into the screw holes 204 of the first and last ones of the connected series of spare tire blocks, the spare tire blocks 20 are set to form an annular spare tire 1000.

[0021] Referring to FIGS. 7 and 8, the spare tire blocks 20 are hollow block members made of high strength metal having a light weight (see FIG. 7). Rubber material may be directly molded on the top side of the spare tire blocks 20, forming the designed top locating groove 202 (see FIG. 8).

[0022] Referring to FIG. 9, a narrow elongated stretcher 40 is shown having a substantially U-shaped middle part bonded with a rubber block 401 and two end lugs 402 at the ends.

[0023] Referring to FIGS. 10 and 11 and FIG. 6 again, two annular spare tires 1000 are bilaterally set into the inside of the outer tire 10, and then the hooked flanges 101 of the outer tire 10 are respectively engaged into the top locating grooves 202 of the spare tire blocks 20, and then a number of stretchers 40 are set in between the two annular spare tires 1000.

[0024] By means of increasing or reducing the number of the spare tire blocks 20, the size of the annular spare tires 1000 is set subject to the size of the outer tire 10 used.

[0025] Because the spare tire blocks 20 can be made through a mass production process, the manufacturing cost of the present invention is not high.

[0026] A prototype of tire reinforcing arrangement has been constructed with the features of FIGS. 1-11. The tire reinforcing arrangement functions smoothly to provide all of the features discussed earlier.

[0027] Although a particular embodiment of the invention has been described in detail for purposes of illustration, various modifications and enhancements may be made without departing from the spirit and scope of the invention. Accordingly, the invention is not to be limited except as by the appended claims.

What the invention claimed is:

1. A tire reinforcing arrangement comprising:

an outer tire, said outer tire comprising hooked flanges respectively extended along two opposite sidewalls thereof on the inside;

two annular spare tires bilaterally set inside said outer tire, annular spare tire each comprising a plurality of spare tire blocks, spare tire blocks each comprising two mounting through holes transversely extended through two opposite sides thereof, a top locating groove adapted to receive said hooked flanges of said outer tire, an embossed bottom wall, and two projecting portions diagonally disposed at two ends, a plurality of links adapted to join spare tire blocks, and a plurality of screw bolts respectively fastened to said mounting through holes to secure said links to said spare tire blocks; and

a plurality of stretchers respectively stopped between said annular spare tires, said stretchers each having two end lugs respectively stopped against said annular spare tires, a U-shaped middle part, and a rubber bonded to said U-shaped middle part.

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(54) **VEHICLE TIRE**

(56)

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(76) Inventor: **Shut Chen Hsu**, No. 7 Alley 1, Lane
163, Sec. 3, Nung-Chuan Rd., I Lan
City (TW)

(*) Notice: Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 205 days.

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(51) Int. Cl.⁷ **B29D 30/08**

(52) U.S. Cl. **156/123; 152/520; 156/130.7;**
156/133; 264/326

(58) Field of Search 156/123, 133,
156/130.7, 110.1, 135; 152/520, 516, 523,
158, 454; 264/326

Primary Examiner—Geoffrey L. Knable

(74) *Attorney, Agent, or Firm*—Rosenberg, Klein & Lee

(57)

ABSTRACT

A vehicle tire fabrication method in which a raw tire tube is adhered with two annular hook members and two annular rubber packing members one the inside and an airtight sealing layer and a combination outer tire wall layer on the outside, and then the raw tire thus obtained is put in a vulcanizing mold and vulcanized into a finished vehicle tire, and then the annular rubber packing members are removed from the finished vehicle tire.

2 Claims, 6 Drawing Sheets

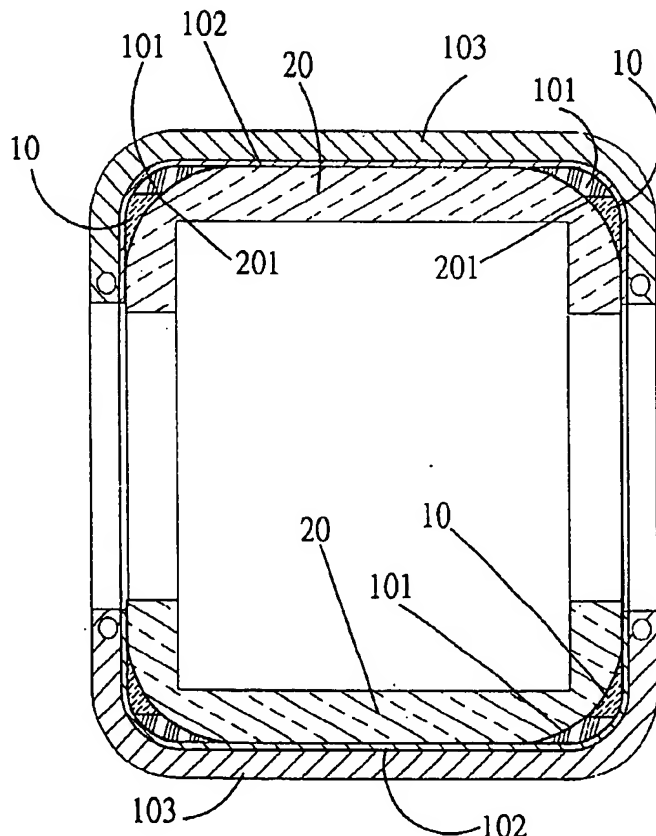




FIG.1

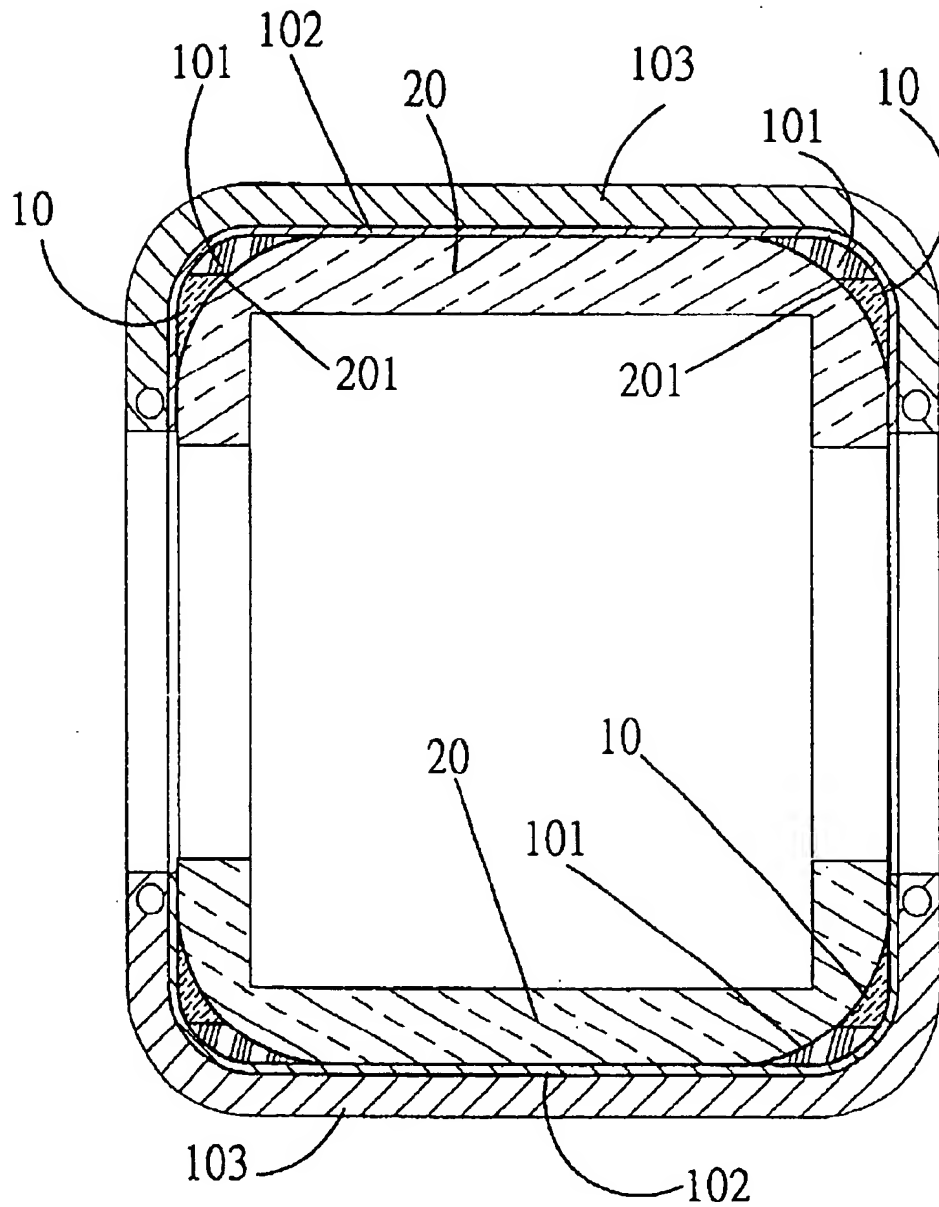


FIG.2

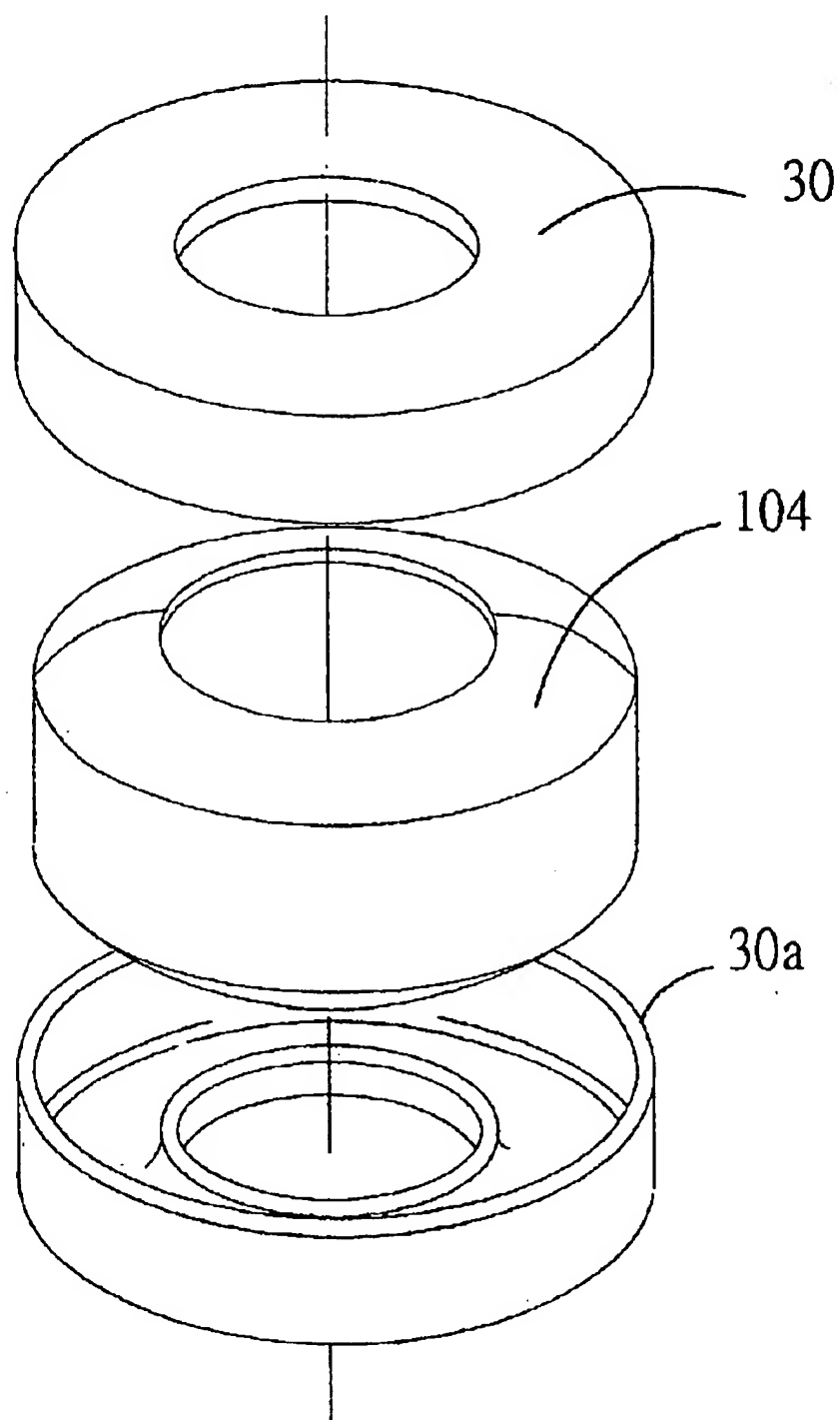


FIG.3

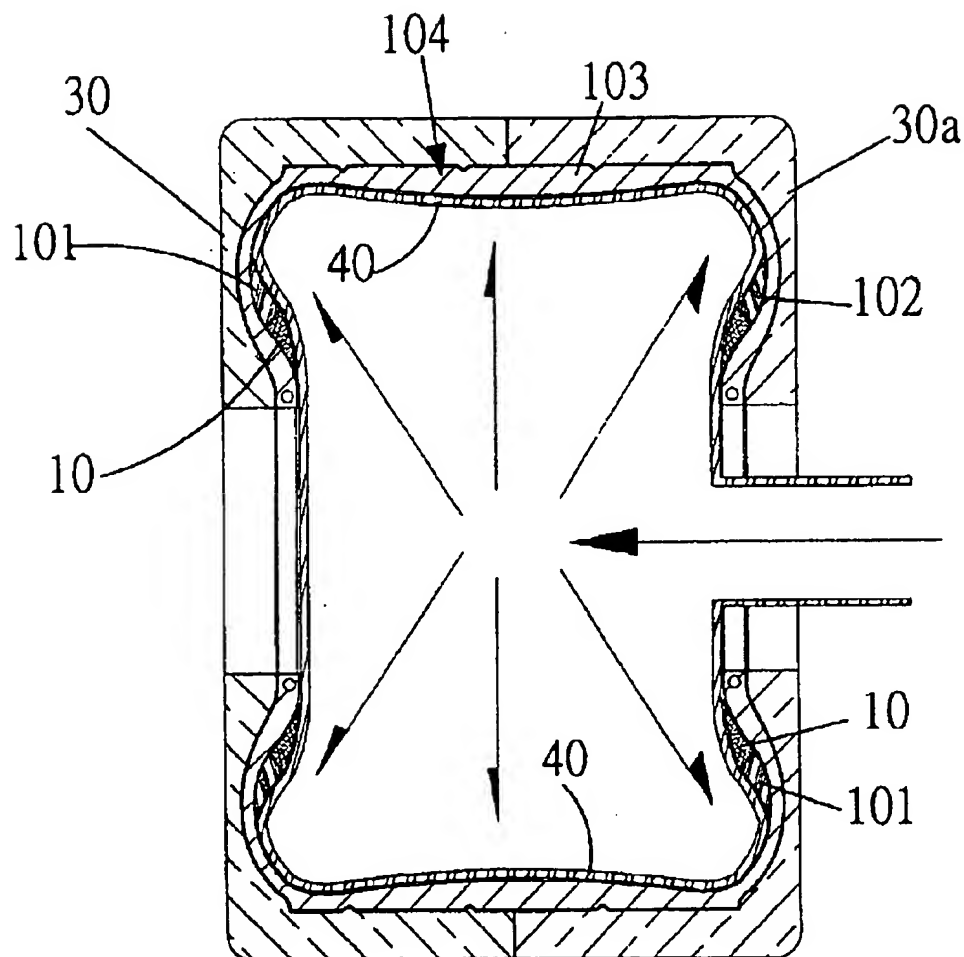


FIG. 4

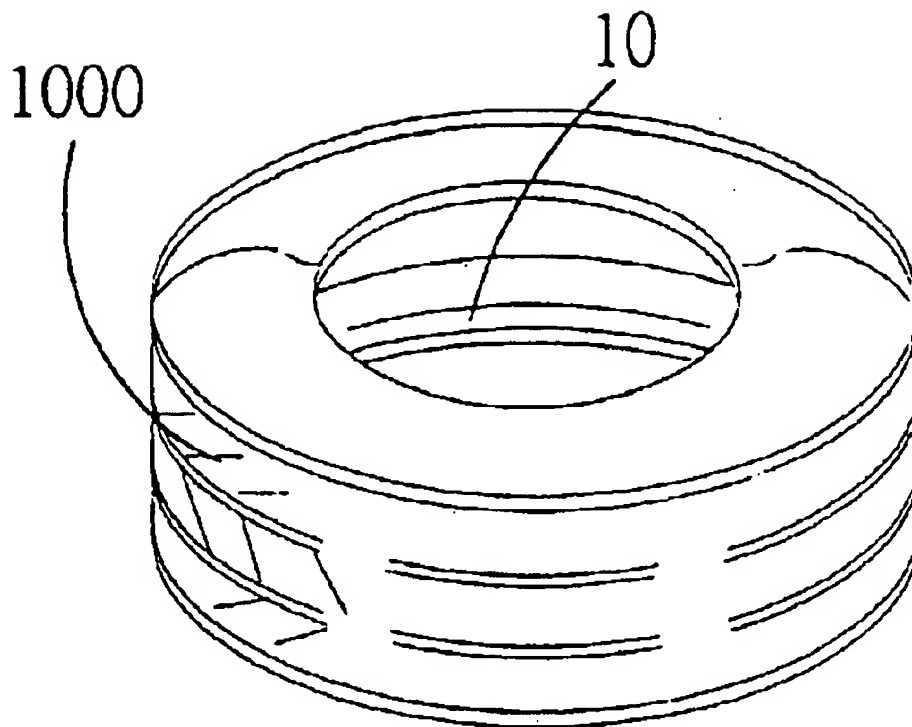


FIG.5

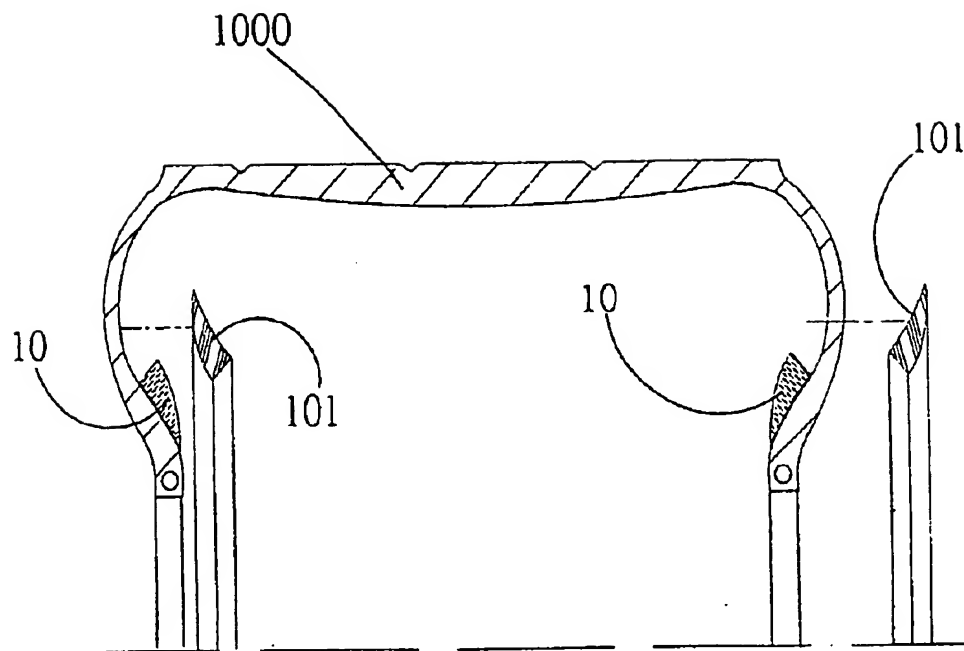


FIG.6

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VEHICLE TIRE

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to vehicle tires and, more particularly, to a vehicle tire fabrication method, which uses a conventional tire fabrication equipment to make a vehicle tire having integrated hook members for holding a spare tire on the inside.

2. Description of the Related Art

For a safety driving, the condition of vehicle tires must be regularly checked. There is known a vehicle tire having an annular hook member on the inside for holding a spare tire so that the vehicle tire can keep running for a certain length of time when exploded or upon an air leakage. This design is functional, however, the fabrication of this design of vehicle tire requires special fabrication equipment.

SUMMARY OF THE INVENTION

The present invention has been accomplished under the circumstances in view. It is the main object of the present invention to provide a vehicle tire fabrication method, which uses a conventional tire fabrication equipment to make a vehicle tire having integrated hook members for holding a spare tire on the inside. According to the present invention, the vehicle tire fabrication method comprises the steps of: (A) preparing a raw tire tube having two smoothly arched angles bilaterally disposed on the inside; (B) adhering two annular hook members and two annular rubber packing members to the smoothly arched angles of said raw tire tube and keeping said annular hook members respectively supported on said annular rubber packing members abutted against each other; (C) adhering an airtight sealing layer to the outside wall of said raw tire tube; (D) fixedly fastening a combination outer tire wall layer to the outer surface of said airtight sealing layer so as to obtain a raw tire; (E) putting said raw tire in a vulcanizing mold between a top die and a bottom die, and then putting a vulcanizing bladder into the inside of said raw tire and inflating said vulcanizing bladder by applying a compressed gas of high temperature to the inside of said vulcanizing bladder for causing said raw tire to be vulcanized into a desired finished vehicle tire; and (F) removing said annular rubber packing members from the finished vehicle tire.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a schematic drawing showing the structure of a vehicle tire according to the present invention.

FIG. 2 is a sectional view showing the structure of a raw tire according to the present invention.

FIG. 3 is an exploded view of a raw tire, a top die, and a bottom die according to the present invention.

FIG. 4 is a schematic drawing showing the vulcanizing process of the raw tire in a vulcanizing mold according to the present invention.

FIG. 5 is an elevational view of a finished vehicle tire according to the present invention.

FIG. 6 is a schematic drawing showing removal of the annular rubber packing members from the finished vehicle tire according to the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to FIG. 1, a vehicle tire 1000 is shown comprising integrated annular hook members 10 on the inside for holding a spare tire body 100.

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Referring to FIG. 2, a raw tire tube 20 is prepared having two smoothly arched angles 201 bilaterally disposed on the inside. Two annular hook members 10 and two annular rubber packing members 101 are respectively fastened to the smoothly arched angles 201 of the raw tire tube 20 and abutted against each other. Thereafter, an airtight sealing layer 102 is adhered to the outside wall of the raw tire tube 20, and then a combination outer tire wall layer 103 (including the carcass, breaker, tread, sidewall, etc., that are prepared from different rubber mixtures containing natural rubber, synthetic rubber, carbon ash, sulfur, resin, and other additives) is covered on the outer surface of the airtight sealing layer 102, forming a raw tire 104. The annular rubber packing members 101 are adapted to support the annular hook members 10 for further vulcanizing shape-forming, not compatible to the annular hook members 10 and the combination outer tire wall layer 103.

The raw tire 104 is then put in a vulcanizing mold between the top die 30 and the bottom die 30a (see FIG. 3), and then a compressed gas of high temperature is applied to a vulcanizing bladder 40 been put inside the raw tire 104 (see FIG. 4), thereby causing the vulcanizing bladder 40 to be inflated and pressed on the inside wall of the raw tire 104 against the top and bottom dies 30 and 30a. When vulcanized, the raw tire 104 is formed into the desired finished vehicle tire 1000 having integrated annular hook members 10 (see FIG. 5) Because the annular rubber packing members 101 are not compatible to the annular hook members 10 and the combination outer tire wall layer 103, they can easily be removed from the finished vehicle tire 1000 (see FIG. 6).

It is to be understood that the drawings are designed for purposes of illustration only, and are not intended for use as a definition of the limits and scope of the invention disclosed.

What the invention claimed is:

1. A vehicle tire fabrication method comprising the steps of: (A) preparing a raw tire tube having two smoothly arched angles bilaterally disposed on the inside; (B) adhering two annular hook members and two annular rubber packing members to the smoothly arched angles of said raw tire tube and keeping said annular hook members respectively supported on said annular rubber packing members abutted against each other; (C) adhering an airtight sealing layer to the outside wall of said raw tire tube; (D) fixedly fastening a combination outer tire wall layer to the outer surface of said airtight sealing layer so as to obtain a raw tire; (E) putting said raw tire in a vulcanizing mold between a top die and a bottom die, and then putting a vulcanizing bladder into the inside of said raw tire and inflating said vulcanizing bladder by applying a compressed gas of high temperature to the inside of said vulcanizing bladder for causing said raw tire to be vulcanized into a finished vehicle tire; and (F) removing said annular rubber packing members from the finished vehicle tire.

2. The vehicle tire fabrication method as claimed in claim 1, wherein the material of said annular rubber packing members is not compatible to said annular hook members and said combination outer tire wall layer.

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